

29, 05  
W36  
pe 198  
212

STATE DOCUMENTS COLLECTION

MAR 3 1989

MONTANA STATE LIBRARY  
1515 E. 6th AVE.  
HELENA, MONTANA 59620



Big Sky

Clearwater

SPRING 1989

# MONTANA TRAINING PROGRAM



PLEASE RETURN





If you have any ideas or information that you would like to pass along to other people involved in the water and wastewater field, please don't hesitate to contact the office of the Water Quality Bureau. This publication welcomes articles of interest and random pieces of information regarding anything to do with water.

An article may consist of your own thoughts and ideas about something you may have experienced. Perhaps such information could help someone else in their day-to-day work. It could also be a technical article that is developed from research information and library resource material. If it has to do with water and you think it may be of interest, give us a call at the WQB: 444-2406.

If you do not wish to continue receiving this publication please send us your name and address so that we can remove your name from our mailing list.

Water Quality Bureau  
Department of Health & Environmental Sciences  
Cogswell Building  
Helena, MT 59620



---

The Big Sky Clearwater is for water and wastewater operators across Montana. It is published two times a year by the Water Quality

Bureau of the State Department of Health and Environmental Sciences in cooperation with the Montana Section of the American Water Works Association and the Montana Water Pollution Control Association.



Publication dates: February 1 and August 1. Last date to receive contributions is 30 days before publication.

# THE MONTANA ENVIRONMENTAL TRAINING CENTER

The importance of training has taken on a new meaning in recent years. Not only are operators required to obtain Continuing Education Credits (CEC's) to maintain their water or wastewater certificate, but treatment facilities are becoming more and more complex, requiring attendance at training courses that will keep them up-to-date in the areas of operation, administration, maintenance and design. This has put a burden on trainers for developing a training program that meets the needs of everyone. With this in mind, the Montana Environmental Training Center (METC) was created.

## WHAT IS METC?

METC is a training organization whose goal is to provide a base for state training coordination, to develop and implement effective training and technical guidance for water and wastewater operators, managers, and other environmental and public health professionals, to help ensure the preservation of the large public investment in water and wastewater systems, and to protect and improve the quality of the state's water.

## OBJECTIVES OF METC

In order to meet statewide training needs, METC has set the following 11 objectives:

1. To establish a Montana environmental training center and approximately seven (7) regional training sites located throughout the state.
2. To provide entry level training and continuing education in the areas of operation, maintenance, financing, engineering, regulations, administration, and management.
3. To support and upgrade the state's established certification program for operators. This includes developing learning objectives, written exams, practical exams, continuing education, certification, and course attendance certification.
4. To ensure that basic and advanced training is made available to operators and other water and wastewater professionals.
5. To develop and implement an instructor training program ("Train-the-Trainer") which will strengthen the trainers' technical knowledge and teaching skills by using effective in-service programs, professional development opportunities and on-the-job training workshops.
6. To maintain and upgrade a comprehensive training needs assessment through existing programs and activities, which includes the Comprehensive Performance Evaluation developed for water and wastewater facilities, operator surveys, advisory committees, and course review; all of which will generate a database to be used as the foundation for identifying and prioritizing needs.



7. To coordinate all training activities through a participatory advisory committee staffed by representatives of all entities and agencies involved in or directly affected by water and wastewater matters.
8. To develop and operate an information clearinghouse for the dissemination of available resources to include available training programs, lists and directories of materials, training videos, technical manuals, equipment inventories, specialized training personnel (both in-state and out-of-state), yearly training activity calendar, and newsletters.
9. To develop public and political awareness for environmental and public health training concerns.
10. To develop an evaluation procedure for determining the effectiveness of the training program.
11. To achieve self-sufficiency so that by 1993, the water and wastewater training program will be a fee-based, self-supporting program.

#### STEERING COMMITTEE

METC activities will be directed by a five-member Steering Committee comprised of two members from the Montana Department of Health and Environmental Sciences, Water Quality Bureau (WQB), two members from Northern Montana College (NMC), and one member at large. Following is the current Steering Committee membership:

Martha Dow, NMC  
Doris Roberts, NMC  
Scott Anderson, WQB  
Dick Pedersen, WQB  
Ray Wadsworth, Member at Large

The Steering Committee will meet several times each year to plan training activities, prepare annual budgets and reports, coordinate with other training agencies, and set goals and direction for METC.

#### FUNDING

Initially the funding for METC will come from NMC's and WQB's current training programs. The only difference is that coordination will be through METC rather than the two agencies.

A big boost will be received from a \$500,000 training grant from the Environmental Protection Agency. This money will be utilized to augment current training activities. Money generated from workshop fees will also go into the METC training program. In the future the majority of METC activities will be paid for by these workshop fees.

#### SPECIFIC PLANS

Over the next five years METC has definite plans for improving the existing training program. Some of these plans include the following:

1. Establish agreements with the vocational-technical schools and community colleges to use their facilities for training.
2. Purchase training equipment to improve training delivery. This includes audio-visual equipment, laboratory equipment, and computer equipment.
3. Hire specialized instructors to deliver seminars in their area of expertise.
4. Upgrade the lending library to include recent materials.
5. Develop instructional and handout material for routine seminars conducted throughout the state.

#### ADVISORY COMMITTEE

A key to the success of METC will be the coordination of activities with other training organizations and water and wastewater operators. To facilitate this, METC is creating an Advisory Committee which will review and advise on METC activities. Each of the following organizations will have a member on the Advisory Committee:

Joint Education Committee of WPCF and AWWA  
Montana State University  
Montana Rural Water Systems, Inc.  
Midwest Areawide Planning Organization  
Montana Rural Technical Assistance Program  
Montana Water/Wastewater Certification Program  
Professional Engineers  
Wastewater Operators  
Water Operators  
Small System Operators

#### SUMMARY

METC is an organization for you. We are very excited about METC's plans and look forward to seeing you at workshops and seminars. If you have any questions or comments regarding METC or training, please write:

METC  
Hagner Science Center  
Northern Montana College  
Havre, Montana 59501

or call:

Dick Pedersen - 444-2406  
Scott Anderson- 444-2406  
Martha Dow - 265-3757  
Doris Roberts - 265-3757



# NORTHERN MONTANA COLLEGE

## A CHOICE FOR HIGHER EDUCATION IN WATER QUALITY AND ENVIRONMENTAL HEALTH

By: Martha Dow  
Northern Montana College

Northern Montana College offers the state's only two-year Associates of Science degree in Environmental Health-Water Quality Technology and an option within the Bachelor of Science degree in Interdisciplinary Studies to specialize in water quality. A non-teaching minor in water quality is an attractive complement to majors in business, technology and the sciences.

These programs are designed to train water and wastewater treatment plant operators, technologists for laboratories, and technicians as assistants to engineers, scientists, and agencies involved in water quality programs. The associate and baccalaureate degrees are structured as multiple-entry, multiple-exit programs allowing students to upgrade their skills and career opportunities without having to repeat course work they have already mastered. The College also prepares students with more immediate job expectations for certification tests through a certificate program.

The curriculum provides students with a broad base in science, mathematics, and general education while incorporating specific topics for water treatment and wastewater treatment processes and laboratory analysis.

Many students, such as recent graduate Debi Rice, have an opportunity to participate with faculty members in research projects that enhance their educational experience. Rice received national attention for recent research on a City of Havre/Burlington Northern Railroad study.

A two-quarter cooperative work experience is an important part of the program, allowing students to bring their classroom and laboratory knowledge to an actual work situation. This practical, hands-on experience is an important part of the water quality technology program. As Havre Treatment Plant supervisor Kristi Kline says, "it's not enough to know how to perform procedures and tests in a lab. You have to see how your knowledge applies to the workplace." Havre requires that plant operators be certified and Kline is a vocal supporter of Cooperative Education. "These students come to us after one quarter and they understand how the plant works, but they also learn the practical side of the business, like how to organize their time."

Students also speak highly of the Cooperative Education experience. Don Hancock's summer co-op experience in Miles City turned into a full-time job offer, so he is completing his associate degree by taking courses at Miles City Community College and through workshops and correspondence courses at Northern Montana College. "The course work prepared me for the job, but there's no way you can learn unless you do it," he commented.

When Grace Rixon came to Northern she "wanted an education." She did her required co-op work at the Havre Plant, earned her operator and wastewater certificates, and went to work in Hamilton. "The experience definitely helped in getting the job" said Rixon.

Doug Hutchinson had similar experiences five years ago. He came to Northern when his wife got a teaching job in Harlem and was attracted to the

water quality technology program, even though his educational background was in business. He co-oped in Helena, graduated and went to work in Chinook. "Management got to know me as a student and when a position opened up in Helena that really helped. I work in a team with four other plant operators and two of us are graduates of Northern's program. I've seen that you can bring people off the street and train them on the job, but that's often a costly and time consuming process. When you're done that person knows how to run that plant, but a degree gives you the technical and theoretical background...the why, not just the how...that makes it easier to move from job to job and plant to plant" he added.

With a more competitive job market, increasing regulations, and higher technology, students and employers are recognizing the value of education in training and upgrading personnel, a concept emphasized in the Montana Environmental Training Center grant.

While continuing to focus on academic degree preparation, the Northern Montana College program also offers a variety of continuing education opportunities to meet license renewal requirements. "We want to make available more opportunities for working professionals who would like to earn degrees, program director Dr. Martha Anne Dow said "During the coming year we will be offering more off-campus courses and we will be developing a computer-video network through modems and teleconferencing that will help us extend both the CEC and degree programs on a regional basis," she added. College articulation and transfer agreements with other educational institutions, particularly the vocational-technical centers and community colleges, will also aid in this effort.

For further information on educational programs available through Northern Montana College, or for a copy of the Water Quality Technology Training Resources catalog, contact Dr. Dow or Doris Roberts, Water Quality Training Assistant, at 265-3757.

---

## METC LOGO CONTEST

The Montana Environmental Training Center (METC) is in need of a logo. Because METC is an organization for you, we feel it is appropriate to solicit your ideas for a logo. **You don't have to be an artist to enter this contest!** Scratch out your ideas on a piece of paper and send it to:

METC  
Attention: Martha Dow  
Hagner Science Center  
Northern Montana College  
Havre, Montana 59501

The winning sketch will be further developed by publication and graphics personnel and then officially adopted as the METC logo. Remember METC is not a building but an organization for environmental training. The contest deadline is March 15, 1989. If you have any questions call:

Dick Pedersen 444-2406 or Martha Dow 265-3757



# YOUR TREATMENT FACILITY HAS AN IMPACT ON STATEWIDE TRAINING

By: Dick Pedersen  
Water Quality Bureau

Since 1983 the Water Quality Bureau (WQB) and Northern Montana College (NMC) have been conducting Comprehensive Performance Evaluations (CPE's) at wastewater treatment facilities. The CPE is a means of assessing whether factors associated with administration, design, operation, or maintenance are affecting the optimal performance of the facility as related to effluent quality. The CPE is a performance evaluation tool. To date CPE's have been conducted at 24 mechanical wastewater treatment facilities and 14 aerated lagoons.

The intent of a CPE is to help municipalities identify factors limiting plant performance and implement a program to address these factors. In addition, the CPE's have a major impact on the direction and implementation of a statewide training program (see article in this issue). Recurring factors identified in facilities across the state become a statewide training target and therefore are used to set the yearly training schedule.

During a CPE, seventy (70) total factors are evaluated in the areas of administration, maintenance, design, and operation. Tables 1 and 2 show the most frequently identified factors in mechanical wastewater treatment facilities and aerated lagoons.

TABLE 1

## MOST FREQUENTLY OBSERVED

### CPE FACTORS AT MECHANICAL PLANTS (24 Facilities Evaluated)

<u>FACTOR</u>	<u>CATEGORY</u>	<u>NUMBER OF TIMES</u>
Process Control Testing	Operation	15
Application of Concepts and Testing to Process Control	Operation	13
Performance Monitoring	Operation	10
Process Controllability	Design	9
Infiltration and Inflow	Design	9
Lack of a Preventive Maintenance Program	Maintenance	7
Aerator	Design	7
Sludge Treatment	Design	6
Ultimate Sludge Disposal	Design	6
Sewage Treatment Understanding	Operation	6
Administration Familiarity with Plant Needs	Administration	5
Return Process Streams	Design	5
Clarifier	Design	5
Technical Guidance	Operation	5



TABLE 2

MOST FREQUENTLY OBSERVED

CPE FACTORS AT AERATED LAGOONS  
(14 Facilities Evaluated)

<u>FACTOR</u>	<u>CATEGORY</u>	<u>NUMBER OF TIMES</u>
Process Control Testing	Operation	10
Aerator	Design	7
Lack of a Preventive Maintenance Program	Maintenance	6
Application of Concepts and Testing to Process Control	Operation	5
Performance Monitoring	Operation	4
Insufficient Funding	Administration	3

If you compare the above factors with seminar topics in the 1989 training calendar (see elsewhere in this issue) you will see we are trying to address these factors in our training program. We are beginning to repeat CPE's at facilities that were evaluated 5 or more years ago. This will be a real test because if our statewide training program is effective there should be a dramatic reduction in the number of times we see the factors listed above.

## O & M EXCELLENCE AWARDS PROGRAM

In 1985, the U.S. Environmental Protection Agency announced the initiation of an annual national Operations and Maintenance Excellence Awards Program. Under this program, regional and national awards are presented to publicly owned wastewater treatment facilities in recognition of outstanding operation and maintenance (O & M) practices and compliance status.

There are presently six regional and national award categories: small, medium and large facilities using secondary and advanced treatment technologies. EPA plans to add a non-discharging facility category for the 1988 awards.

The awards program is intended to highlight effective local operation and maintenance programs and increase public awareness of wastewater treatment facility contributions to clean water. This new EPA program recognizes the commitment by local officials and plant personnel to maintaining and protecting the nation's environmental infrastructure.

If you are interested in nominating the wastewater treatment facility in your community for this award, please contact Dick Pedersen of the Water Quality Bureau at 444-2406.

# 1989 TRAINING CALENDAR

<u>DATE</u>	<u>TITLE</u>	<u>LOCATION</u>
Jan 11-12	Construction Inspection	Butte
Jan 13	1st Annual Meeting - Mt. Assoc. of Co. Water and Sewer Districts	Bozeman
Jan 17	Hydraulics and Pumps	Great Falls
Jan 18-19	Construction Inspection	Glasgow
Jan 26	Turbidity and Surface Water Treatment	Havre
*****		
Feb 8	Basic Supervision in Public Works	Sidney
Feb 9	Basic Water and Wastewater	Kalispell
Feb 14	Turbidity and Surface Water Treatment	Conrad
Feb 15	Basic Supervision in Public Works	Missoula
Feb 16	Basic Operations for Small Water Systems	Havre
Feb 22	Basic Water and Wastewater	Billings
*****		
Mar 2-3	Montana Rural Water Systems Annual Conference	Great Falls
Mar 10	Certification Math Review	Billings, Glendive, Great Falls, Havre, Helena, Missoula, Kalispell
Mar 11	Certification Exams	Same as Mar 10
Mar 14	Troubleshooting Lagoons	Miles City
Mar 29-31	Joint Conference MSAWWA & MWPCA	Great Falls
*****		
Apr 10-12	Spring Sanitarians Education Conference	Whitefish
Apr 11-13	Advanced Water Treatment	Helena
Apr 18	Lagoon Operation & Maintenance	Glasgow
Apr 18	Installation and Repair of Meters	Billings
Apr 20	Installation and Repair of Meters	Missoula
Apr 27	Turbidity and Surface Water Treatment	Whitefish

\*\*\*\*\*



May 3	Collection System Maintenance	Great Falls
May 11	Basic Electricity	Havre
May 16	Turbidity and Surface Water Treatment	Glendive
May 18	Turbidity and Surface Water Treatment	Glasgow
May 18	ABC Certification Information & Study	Havre
May 22	Radio Telemetry	Billings
May 24	Radio Telemetry	Great Falls
May 25	Basic Operations for Small Water Systems	West Glacier
May 26	Radio Telemetry	Missoula

\*\*\*\*\*

*Jun	Community Development Block Grant (CDBG) Application Workshop	Great Falls, Billings,
*Jun	Community Development Block Grant (CDBG) Application Workshop (continued)	Missoula, Glendive
*Specific dates have not been finalized.		
Jun 7	Distribution and Collection Systems	Bigfork
Jun 13	Chlorination	Missoula
Jun 14-15	Microbiological Process Control in Activated Sludge	Missoula
Jun 15	Chlorination	Billings
Jun 18-22	AWWA National Conference	Los Angeles
Jun 27	Water and Wastewater Design Seminar	Helena

\*\*\*\*\*

Jul 11	Use of Polymers in Water and Wastewater	Billings
Jul 18	Water Auditing for Small Systems	Culbertson
Jul 18	Turbidity and Surface Water Treatment	Great Falls
Jul 20	Water Auditing for Small Systems	Miles City
Jul 25	Turbidity and Surface Water Treatment	Helena

\*\*\*\*\*

Aug 8	Turbidity and Surface Water Treatment	Billings
Aug 10	Safety in Water and Wastewater	Missoula
Aug 22-23	Innovative and Alternative Sewer Systems	Helena
Aug 22-24	Wastewater Laboratory School	Havre

\*\*\*\*\*

Sep 7	Water Auditing for Small Systems	Lewistown
Sep 13-15	Mont. League of Cities and Towns Annual Conf.	Helena
Sep 15	Deadline for CDBG Grant Application	
Sep 25-28	Annual School for Water and Wastewater Operators	Bozeman
Sep 29	Certification Exams	Bozeman

\*\*\*\*\*

Oct 2-4	Fall Sanitarrians Educational Conference	Bozeman
Oct 8	Ray Wadsworth Turns 29 Today	
Oct 12	Operating and Maintaining Control Valves	Billings
Oct 15-19	WPCF National Conference	San Francisco
Oct 26	Distribution and Collection Systems	Billings

\*\*\*\*\*

Nov 9	Water Auditing for Small Systems	Thompson Falls
Nov 14	Chlorination	Butte
Nov 16	Workshop for Water and Wastewater Administrators	Kalispell

\*\*\*\*\*

Dec 13-14	Basic Operations for Small Water Systems	Kalispell
-----------	--	-----------

Note: 1989 training calendars were mailed to all class 1-4 certified operators. Any operators-in-training, class 5 operators, or others who would like to receive a calendar please notify the Water Quality Bureau at 444-2406. Additional copies will be distributed while our supply lasts.

---

## CANADIAN SEMINAR ON WELLS

The Saskatchewan Environment and Public Safety recently informed the Water Quality Bureau of a seminar on "Well Operation and Performance". The seminar will be held in two locations; March 21, 1989 in Regina, and March 23, 1989 in Saskatoon. For those of you planning a trip to Canada, why not "kill two birds with one stone" and attend this seminar. The seminar will be worth approximately 0.5 CEC's. For more information contact:

Gus Feitzelmayer  
Operator Training Coordinator  
Saskatchewan Environment and Public Safety  
(306) 787-6174 (work)



# OPERATOR CERTIFICATION UPDATE

By: Rosemary Fossum  
Water Quality Bureau

The following information constitutes an operator certification update.

**MAIL CALL** - All kinds of information important to your job as an operator-- your renewal notice, your BIG SKY CLEARWATER, training course information-- won't get to you if your address is not current with the certification office. Even if you leave a forwarding address with the post office, did you know that fourth class mail will not be forwarded and will be discarded unless the mailer pays an additional fee for forwarding? For mass mailings such as the Big Sky Clearwater, payment of that fee may not be practical.

**TERMINATION** - And speaking of address changes, did you know that if you terminate your position, both you and your employer are required by law to notify the certification office within three business days after termination? (37-42-307(2), MCA

**RESPONSIBLE CHARGE** - For your information and by request of the Water and Wastewater Operators' Advisory Council, we are printing the Administrative Rules of Montana (ARM) on responsible charge:

16.18.201(5): "'Responsible charge' means the responsibility exercised by an individual in day-by-day operation and/or supervision of a water distribution system, water treatment plant, wastewater treatment plant, or any part thereof, which may affect the quality and/or quantity of the water for human consumption or the quality of the effluent produced by such works."

16.18.206(1): "Every water treatment plant, wastewater treatment plant, or water distribution system must have an individual in **responsible charge** at the facility site or on call at all times who can be contacted immediately and be at the site within a short period of time."

16.18.206(2): "Except as provided in this rule, the individual in **responsible charge** of a facility must be a fully certified operator."

16.18.206(3): "An operator with a temporary certificate or an operator-in-training certificate may be the operator in **responsible charge** of a facility upon request to the department by the facility owner and verification by such owner that the facility is unable to employ a fully certified operator, and upon a finding by the department that the operator has the basic knowledge necessary to operate the facility and that public health will be protected. The department shall base its decision upon the results of on-site inspection of the facility; review of the facility's plans and specifications; review of the operator's records, experience and training; and examination of any other reasonably available and relevant information."

**CEC REQUIREMENTS ARE ALMOST DUE** - Your certification must be renewed annually by June 30. However every other year Class 1-4 operators must report the continuing education credits required for the certification held. The end of the next CEC reporting biennium is June 30, 1990.



# SCENES FROM THE 55TH ANNUAL SCHOOL

From Monday, September 26, 1988 through Thursday, September 29, 1988 147 water and wastewater professionals attended the 55th Annual School for Water and Wastewater Operators and Managers at Bozeman.

This years' school offered attendees an opportunity to hear numerous speakers discussing a variety of topics. Excellent interaction between participants allowed for practical application of the topics presented. Congratulations to those in attendance for making the 55th school a huge success.

The following are some scenes from the school.



Rosemary Fossum, answers certification questions.



Steve Ruhd, Conrad and John Campbell, Polson discuss lagoon operation and maintenance.

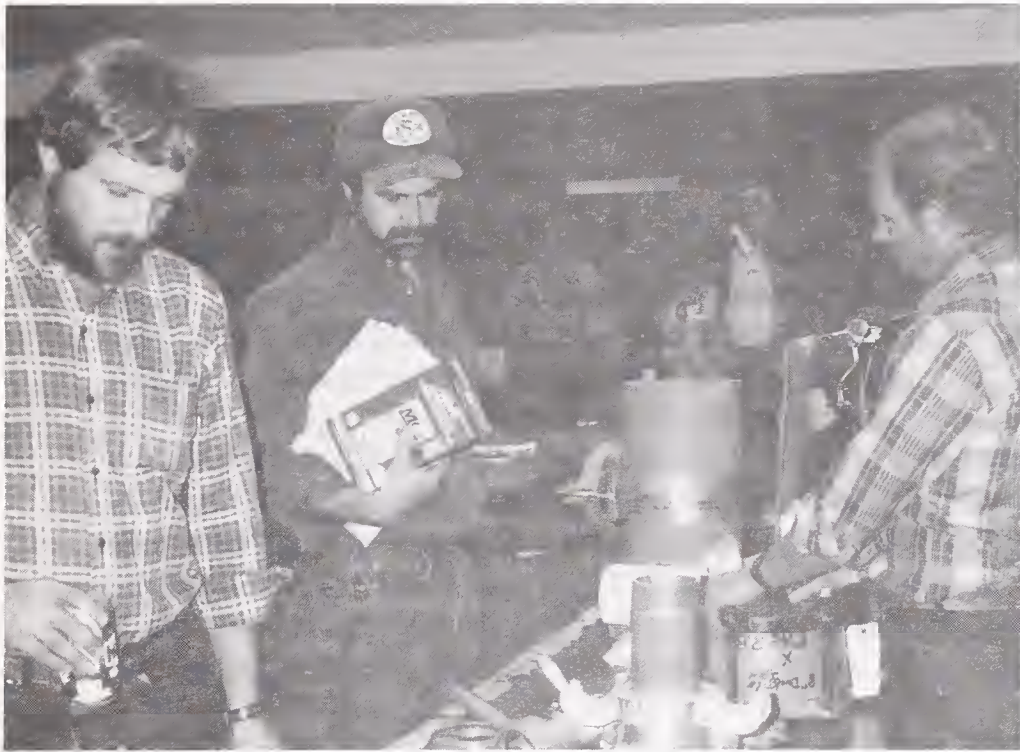


Chuck Duke, Montana Seals & Packings demonstrates mechanical seals.

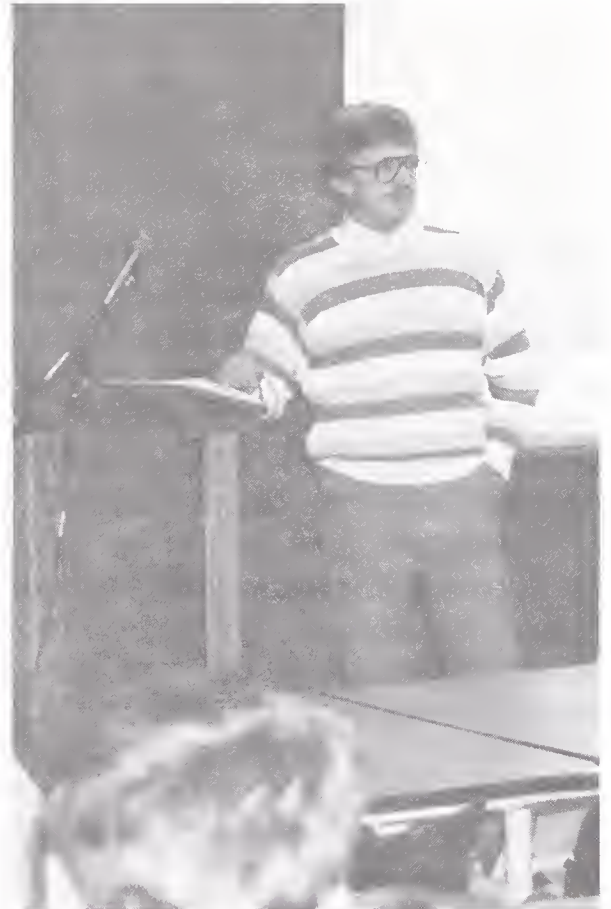


Opening Session





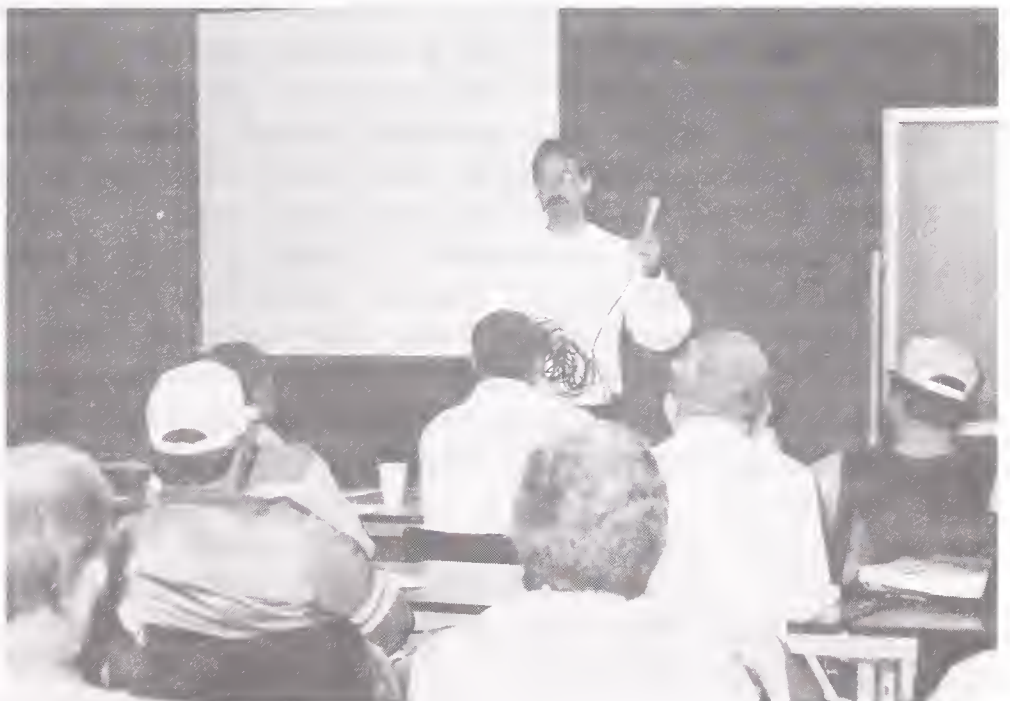
Mark Frahm (far right) of Great Falls demonstrates equipment used on collection and distribution systems.



Bill Bahr, Envirotech Operating Services discusses the importance of safety.



Rob Renner, Process Applications, Inc. Leads workshop on water treatment.



Craig Brawner, Water Quality Bureau, points out the proper use of dissolved oxygen meters.



# WPCF DIRECTOR'S REPORT

WPCF is progressively looking into the future to earn a seat as a front-runner in solving today's and the future's environmental problems. No longer can a federation as varied and large as WPCF focus narrowly on one subject. We are one actor in solving global problems that require cooperation and commitment between all organizations and agencies concerned with environmental protection. During this last year, WPCF has done just that. They sponsored Wingspread, a meeting of "thinkers" tasked with envisioning what the world's water problems of the future are to be so efforts can be made to solve them prior to occurrence. Increased cooperation with AWWA was enforced through the publication of BENCH SHEET and joint specialty conferences. Developing new coalitions in areas such as hazardous waste, groundwater contamination etc. was a high priority for the federation.

Some of the major events of last year were Operations Challenge 88, completion of the building fund, and creation of the WPCF Research Foundation. Operations Challenge 88 drew 22 teams of operators from many member associations to Dallas. They challenged each others knowledge on plant operations, safety, maintenance and laboratory procedures. This competition has led the MWPCA to try a mini-challenge in conjunction with our '89 conference.

The Building Fund drive surpassed the goal of \$1.5 million. With the building fully rented, the federation members are enjoying the benefits of the savings resulting from the construction of the new building in lieu of paying rent.

The Board of Control made the WPCF Research Foundation a reality. The foundation will fill a major gap in research to solve wastewater and related subject problems. Along with the foundation, the decision was made to split the Journal into two periodicals. One periodical will be of general-interest similar to the front section of the present journal. The second periodical shall be a bi-monthly research journal retaining WPCF's commitment to publishing a high quality research document. This new periodical will be available in the fall of 1989.

Even though the WPCF appears to be greatly removed from our activities in Montana, the federation is becoming more and more a tool that can be used by our members. The WPCF technical publications are still the major reference in the industry. Inclusion of services for laboratory personnel and the changes in the Journal format are two of the ways that the federation is responding to our needs. There exists a large reservoir of talent and information that is available and only a telephone call away. Don't just pay your dues. Make the WPCF work for you!!

\*\*\*\*\*



# *MWPCA PRESIDENT'S MESSAGE*

By: Tim Hunter  
Acting President, M.W.P.C.A.

Last fall, our M.W.P.C.A. President, John Connell, had to resign his position due to personal and work demands. John has been an active member of our group for many years, and we should all be grateful for the contribution he has made. He has accepted employment at the University of Iowa.

At the board meeting which was held in Bozeman last fall, it was decided that I would become Acting President until March, when I am scheduled to become President "for real". At some point during the annual convention, I suppose I will have to hand myself the gavel. My goals for our organization are simple. With your help, I hope to streamline the budget process to eliminate those lengthy budget sessions at the business meeting, and I hope to develop a mission statement for the Montana Water Pollution Control Association. The convention in Great Falls in March promises to be another success. Watch for our operators' competition. The winners will be announced in Great Falls. See you there!

---

## 1989 NATIONAL DRINKING WATER WEEK

"DRINKING WATER: ON TAP FOR THE FUTURE"

National Drinking Water Week is scheduled for May 1-7, 1989. Now is the time to start planning for local promotions! Local promotions can increase public awareness of water resources and treatment requirements, and can help generate support for operational or infrastructure needs. This is also a good opportunity to advertise a quality service often taken for granted!

This year's theme is "Drinking Water: On Tap for the Future". A steering committee made up of representatives from American Water Works Association, Environmental Protection Agency, Association of State Drinking Water Administrators, League of Women Voters, and other interested parties is already planning activities on the national level. Local activities will be a direct benefit to your system, though, and could be designed to include your whole home town.

Some suggestions for local promotions are:

- School Education Programs
- School Poster Contests - Display the posters in a location frequented by residents.
- Billing Inserts With Information About Your Water Supply
- Utility Open Houses and Tours
- Water Supply History Displays (Photos, News Articles, etc.)
- Public Service Announcements
- Newspaper Articles

# A MESSAGE FROM YOUR NATIONAL AWWA DIRECTOR

By: Ralph Dunahoo

As many of you know by now AWWA National has a new executive Director, John B. Mannion. John has made many changes in the operation of National, and we as directors see them as very positive. Section officials are experiencing these changes. I will report more on these changes after the January Board of Director's meeting in Puerto Rico.

The visiting AWWA officer for our annual meeting will be the National AWWA President, Steve Bonk and his wife Norma. Steve is the Director, Water Quality Supply Division, Reg. Municipality of Ottawa-Carleton, Ottawa, Ontario, Canada. Steve has been very active in AWWA, serving on numerous committees in the U.S. and Canada.

Three standards will be approved at the January board meeting - C900-89 for polyvinyl chloride PVC pressure pipe 4" thru 12", D100-89 welded steel tanks for water storage (addendum) and B100-89 for filter material (Revision).

Although wastewater is not our main concern, the 1987 Water Quality Act changed treatment of wastewater from a technology basis to a water quality basis, and drinking water standards are now in the pot with other standards, e.g. swimmability and fishability. Organizations such as WPCF are becoming very interested in the Drinking Water Standards process.

There are several legislative bills being considered by Congress or recently enacted that will have at least some impact on drinking water: The Federal Insecticide, Fungicide, Rodenticide Act (FIFRA) amendments may help research efforts on pesticides regulated under the SDWA. The Resource Conservation and Recovery Act (solid waste disposal rules and hazardous waste disposal) will have a big influence on source water; and the existing Superfund amendments and Reauthorization Act (SARA) is directly linked to the Drinking Water Standards through clean up. Several bills are being considered for infrastructure funding that will deal with drinking water. Congress enacted 13 appropriation bills in 1988, several containing key issues such as Special Education Funding, State Grants and possible Small Water System Funding. The lead issue isn't dead yet, we were able to slow it down some, but many Congressional staffers have allied themselves with ardent environmental groups and are determined to establish in law, that all utilities are fully responsible for drinking water quality at the tap.

AWWA will continue to support legislation to provide safe water for everyone, and provide research and training in the water industry. Support this worthwhile organization in their efforts. If you are not a member now, please give serious consideration to joining our organization.



# **REPORT TO MONTANA AWWA MEMBERS**

By: Denise Ingman, Chairman

Many committee members have been working hard these last months to meet the goals they have set for the year. I'd like to thank all of you for your efforts to keep the organization progressing. Below I will try to update you on some committee activities and I'd also like to remind all committee chairmen to write a report on your committee activities for the year and bring it with you to the convention in March. If you are unable to attend, please mail your report to Paul Torok, Secretary/Treasurer, at P.O. Box 73, White Sulphur Springs, MT 59645. If you are able to attend the conference, please be ready to give a report on your committee activities at the first business meeting.

The Host City Committee, headed by Lyle Meeks, is working overtime to get the conference organized. The agenda and technical program look exceptional this year. Thanks to the program committee for all of your hard work too. Please try to attend the pre-conference seminar on "Coagulation and Filtration" by Dr. Ray Letterman. Jim Kaercher, program committee chairman, set up the seminar with the Joint Education Committee. (Details on the seminar are located with the conference pre-registration information in this issue.)

In addition to sponsoring the pre-conference workshop, the Joint Education Committee plans to sponsor several other educational seminars in 1989, including "Installation and Repair of Meters" in Billings and Missoula, "Collection System Maintenance" in Great Falls, "Distribution and Collection Systems" in Bigfork and Billings, "Radio Telemetry" in Billings, Great Falls, and Missoula, and "Use of Polymers in Water and Wastewater" in Billings. Another seminar that our section is going to try to sponsor is called "Emerging Technologies for Drinking Water Treatment". The seminar is presented by the EPA and covers current and emerging technologies, barriers to new technology, disinfection, organics and radon removal, and corrosion control. We are just now in the planning stages for this seminar but we hope to be able to sponsor it sometime in April or May. Watch for more information on this valuable seminar. Except for the latter seminar, all of the others being sponsored by JEC, METC, WQB, MRWS, etc. are listed on the 1989 Montana Training Calendar for Water and Wastewater Professionals. All class 1-4 operators should have received a copy in January. If you did not receive a copy contact the Water Quality Bureau at 444-2406.

In September of 1988, our section applied for National funds from the Associate Allotment pool. The source of these funds is from a small percentage of membership dues from Associate members. The goal of the fund was to assist small sections who might not have sufficient dollars to fund the following programs: 1) Small Systems, 2) Safety Programs, 3) School Education, and 4) Officers' Regional Meetings. We applied for \$3479.90 for the School Education program, \$500 for the Small Systems committee, \$647.50 for the Safety committee, and \$1295 for attending officers' meetings for a total of \$5922.40. Of this amount, we successfully obtained \$2336. The board approved \$1000 for the School and Public Information committee, \$500 for Chairman-Elect, Gerald Lukasik, to attend the officers' regional meeting in Minneapolis in April, with the remainder to be split between the Safety and Small Systems committees.



Shelley Nolan, chairman of the School and Public Information committee, has purchased several educational materials for distribution to schools, including classroom packages for teachers on incorporating drinking water into their curricula, poster sets for displays, and others. Shelley gave a presentation on the programs available through AWWA at the Montana Teachers' Association Convention held in Helena in October and distributed some of the materials at that time. She hopes to get committee members involved in contacting the school districts in their hometowns to continue spreading the information. The committee also plans to purchase a video and movie on drinking water that can be loaned out to schools and others, like operators who are called upon to give presentations on water treatment. Kristi Kline, Chairman on the WPCF side, also has videos available to be loaned for these purposes.

For National Drinking Water Week, May 1-7, 1989, National has decided to concentrate on several activities including a national poster contest for high school art classes, a Presidential Proclamation, billing inserts, open houses, a national press conference, public service announcements, and a special information packet to be developed by EPA. National promises all materials will be ready for mailing by February 28, which will allow two months lead time for local program planning and distribution. The AWWA board has come up with some ideas for local activities that we will need some help on. One activity would be to tape a series of interviews that would be aired on TV for 3-4 nights during the week. Another idea would be to conduct a statewide drinking water taste contest (similar to the one we hold annually at the conference). The board will be working with the Public Education committee to make National Drinking Water Week a time for letting the public know about this all-important resource. Look for more information soon.

The Small Systems committee hasn't had the opportunity to do much yet. National asked us to form the section long before they had any concrete ideas about what to do for small systems. National has recently hired a program manager for this committee and our section has been busy giving her information. I recently filled out a very lengthy survey form and personally talked to Trudie Lay and I feel she is beginning to form a basis from which the Small Systems Committee can begin to be involved with. I think we all agree that small systems need some special attention but it takes a lot of time and effort to create a workable program. Some of the needs of small systems probably cannot be met without funding.

The Government Affairs committee co-chaired by Jim Melstad and Scott Anderson, has been very active. The group has sent written comments to our congressmen and has had personal meetings with their representatives regarding specific requirements of the Amendments to the Safe Drinking Water Act. For the current Montana Legislative Session, this committee has set up a network of contacts throughout the state. Whenever a bill of concern to the water or wastewater industry is introduced, the contacts will be notified and they in turn will contact their local legislators regarding the bill. The Government Affairs committee has written an update on their activities elsewhere in the Clearwater.

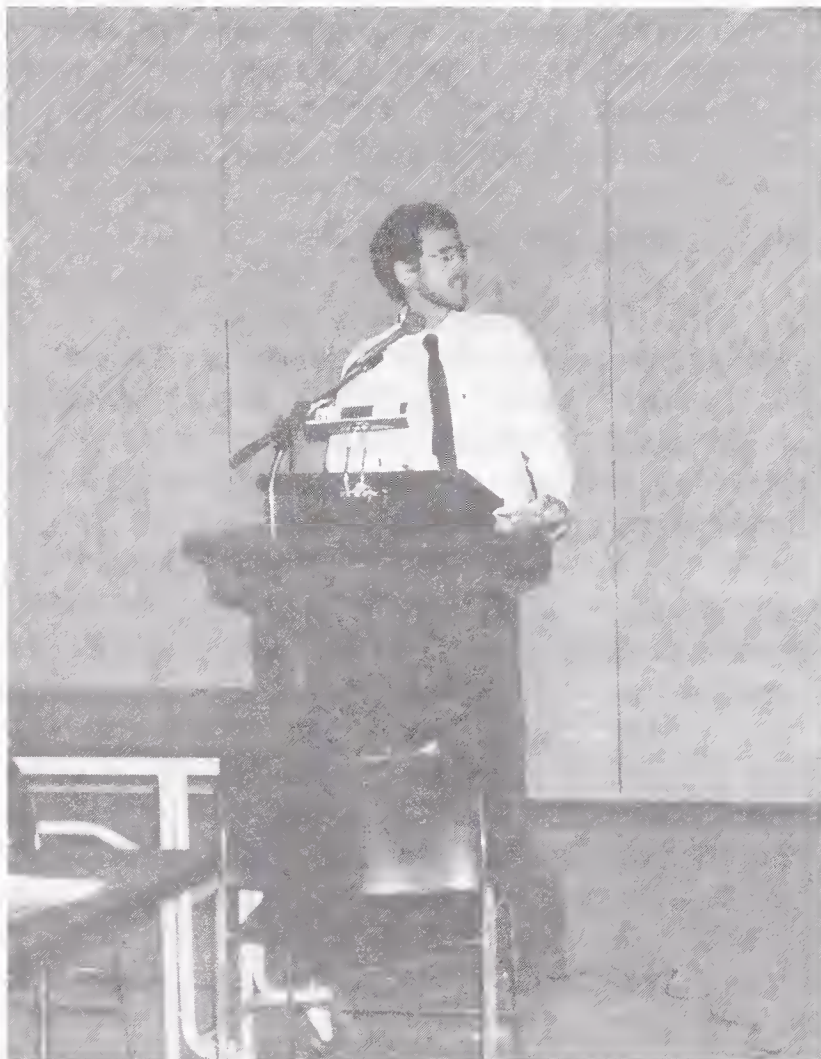
My thanks again to all you committee and board members for your dedication to our organization. I hope to see all of you at the conference in Great Falls.



# GOODBYE RICK

Rick Rosa, well-known as the editor of the Big Sky Clearwater, is now working as a civilian engineer for the U.S. Department of Defense at Fairchild Air Force Base in Spokane, Washington. As most of you know, Rick had worked in the Drinking Water Section of the Water Quality Bureau for nine years. He left us in October and his shoes are still unfilled.

Those of us in the public water supply business during that period have most likely received a letter signed by Rick or have spoken to him on the telephone at one time or another. Rick was a work-a-holic in the best sense of the word. You could always trust Rick to take on the job that no one else wanted and to go that extra step to get the job done. Rick has kept the Clearwater alive and running since 1986 in addition to performing all his other duties as an environmental engineer for the Drinking Water Section of the Water Quality Bureau. Rick was truly the "dedicated employee".



Those of us who only saw the face of Rick Rosa the enforcer perhaps were not aware of Rick Rosa the concerned citizen, dedicated friend, and rabid Orioles fan. He's a man who loved to play the ponies here in Montana, and he's continuing to do so in Spokane (when he's not playing the greyhounds). He loved "Butte, America" where he had received his engineering degree and you could always count on Rick to share a brew or two.

Rick had his own style of getting the message across to those who needed to hear it. You might not like what he had to tell you, but you could tell that he was concerned on both a professional and on a personal level. You had to admit that he could get your attention back onto the problem at hand if that were needed. During the "Rick Rosa era" numerous small water systems have been brought into compliance with the Safe Drinking Water Act. Rick would tackle a system that had been neglected for years and he would do whatever was needed to make sure that the homeowners received a safe drinking water supply. Rick's enthusiasm, dedication, and distinct personality will be sorely missed here in the Water Quality Bureau. The same feelings for Rick are shared by numerous sanitarians and operators around Montana who have worked with Rick during these past nine years. There is only one Rick Rosa and may the Orioles, greyhounds and the Fairchild Air Force base always hold him in the highest esteem!



# WPCA/AWWA GOVERNMENT AFFAIRS COMMITTEE

## JANUARY 1989 REPORT

This report is the first in what will hopefully become a regular function of the Government Affairs Committee of the Montana Sections of WPCA and AWWA. Since there is a lot of information to cover, we will get right to it. If you have any questions, please contact Scott Anderson or Jim Melstad at the Water Quality Bureau (444-2406). If we cannot help you, we will try to get the information for you, or steer you in the right direction.

### PUBLIC WATER SUPPLY ISSUES

1. The **SDWA amendments** are still in the works. Many of the deadlines for new regulations have been revised. Please note the following updates:

- The final surface water treatment rule is scheduled for 6/89. The provisions of this rule have not changed significantly from earlier versions. Most unfiltered surface water supplies will have to provide filtration unless stringent conditions are met. For instance, watersheds must be totally controlled. Raw water quality must be high as demonstrated by **weekly** coliform sampling. Finished water quality must also meet stringent conditions. The filtered supplies will also have to meet more stringent finished water standards.

- The final coliform rule is scheduled for 6/89. The regular monthly sampling frequency for coliform bacteria is scheduled to **remain the same**. However, the check sampling requirements will increase drastically. For instance, a small system that now samples once per month will have to take 4 check samples for one coliform positive sample, and then take 5 samples the next month.

- Proposed standards for 40 more contaminants are scheduled for the spring of 1989.

- Proposed standards for another 34 contaminants are scheduled for between July and November of 1989.

- The proposed rule for (mandatory) disinfection is scheduled for 6/89.

- Other rules, such as the lead and copper rule are also still in the works. (See enclosed regulatory status sheet).

2. The week of May 1-5 has been designated as **National Drinking Water Week**. It has been suggested that a grade school poster contest be held. If you should have any ideas for activities, please contact Denise Ingman at the Microbiology Laboratory Bureau, Cogswell Building, Helena 59620, phone 444-2642.

3. Cities larger than 10,000 in population started sampling their public water systems for **volatile organic chemicals (VOC's)** in 1988. The systems that serve between 3,300 and 10,000 people will be required to start sampling before March 31, 1989. There are presently two certified labs in the state. The Chemistry Laboratory Bureau at the Department of Health and Environmental Sciences in Helena, and Energy Laboratories in Billings are certified at this time. The Water Quality Bureau will be in contact with the public water supplies regarding the sampling. At this time, it appears that money is available to the Water Quality Bureau to pay for the sampling required this year.

4. The **"Lead Contamination Control Act"** was enacted by Congress on 10/31/88. This act does not directly relate to public water supplies, but it does ban water coolers that contain lead and mandates replacement of existing coolers with lead in them.



## WATER POLLUTION CONTROL ISSUES

**Montana Revolving Loan Program**--Legislation will be introduced this session to create a new assistance program for funding water pollution control projects. The 1987 Amendments to the Federal Clean Water Act established the basis for the new program concurrent with the phaseout of the EPA Construction Grants program. The grants program will receive no additional federal funds after 1990, whereas the loan program will receive its first appropriation this year with funding authorized for six consecutive years thereafter. Montana could receive up to 40 million federal dollars during this period with a state share of almost 8 million required to match the federal funds.

Eligible projects in the new program include wastewater treatment plants, sewage collectors, interceptors, technical studies and nonpoint source control facilities. The criteria for funding will be much more flexible than the grants program which has become increasingly restrictive. Financial assistance in the form of direct loans, project refinancing, bond insurance, and utilization of the funds as security for a state bond sale (leveraging) are allowable uses of the revolving fund. Loan terms will allow up to 20 years to repay the loans with interest rates varying from 0% to market rates. It is anticipated that initial loans will be in the 2-3% range depending on authorizing legislation.

Legislation creating the program has been drafted and will be introduced by Representative Mark O'Keefe this session. The program, as proposed, will be administered jointly by the Water Quality Bureau and the Department of Natural Resources. The loan program will initially utilize many of the requirements of the Construction Grants program although the funds lose much of their federal character (and related requirements) when second round loans are made. It is possible that the first loans could be made in the summer of 1989.

**This new program will provide the major source of financial assistance for water pollution control projects in the future. We urge all interested parties to support this legislation by contacting their legislators.** Scott Anderson of the Water Quality Bureau can be contacted for further information.

**New Sludge Disposal Requirements**--The EPA recently developed the first draft of the new technical regulations governing the treatment and disposal of wastewater sludge. While most of the commonly used disposal methods will still be allowed, additional monitoring of sludge quality will be necessary. The major emphasis in the new regulations is placed on the reduction of health hazards associated with sludge. Limitations on allowable concentrations of toxic pollutants, metals, pathogenic bacteria and viruses can be expected. Allowable disposal practices will depend on the concentrations of these constituents. Monitoring frequency will be based on the plant design capacity. These regulations should be distributed for public comment sometime this year. We encourage you to review the regulations and provide EPA with your concerns.

## LEGISLATIVE UPDATE

The Montana Legislature convened on Monday, January 2nd, in Helena. Some of the proposed legislation definitely relates directly to water and sewer issues. At the time of this writing, none of the legislation of concern was introduced, so it was difficult to obtain information relative to the bills. If you know the bill number, copies can be obtained by calling 1-800-237-5079. Or, you can go to the Data Distribution Center in the basement of the Capitol Building in Helena and obtain a copy there. There will be a small charge.

# ASSISTANCE FOR CAPITAL IMPROVEMENTS PLANNING UNDER DEVELOPMENT

By: Robb McCracken  
Department of Commerce

A capital improvements plan (CIP) is a public works needs assessment and financing system that has been used by many local governments for over 50 years. Essentially, a CIP is a local government's plan to prioritize, finance and construct or repair public works projects over a 5 year period. The CIP can save the local government and taxpayers thousands or even millions of dollars because of the efficient management, financing, and engineering methods used. It can help prevent public works "crises". Having a CIP can help a local government to get grants and other financial assistance.

To assist small towns and rural counties with the development of CIP's, three agencies are jointly preparing an educational package called the Mini Capital Improvements Plan (Mini CIP). These agencies are the Community Technical Assistance Program (CTAP), Community Development Block Grant Program (CDBG), and MSU Rural Technical Assistance Program (RTAP). Primary funding of the Mini CIP is being provided by CDBG with funding of the gravel road maintenance analysis portion by RTAP. Developed by CTAP, the Mini CIP approach is a simplified engineering needs assessment and financing system for the most problematic local facilities -- streets/roads, water systems, and sewer systems. The package addresses common small town problems in managing and financing the three facilities - lack of funds, lack of public support, inadequate public education regarding the need for paying for public work repairs, inadequate engineering data absence of cost depreciation schedules, lack of training opportunities for public works managers, absence of financial packages for rural areas, etc. The information is intended to assist and encourage municipalities in making their own assessment of needs limiting the use of technical consultants. It will not replace the need for technical expertise where the situation warrants it. Local government advisors from the League of Cities, various local governments, state agencies, and federal agencies are assisting CTAP in the project.

Field testing has occurred in two small towns. The system is planned to be available for draft review by local governments by July 1989. Contact Robb McCracken at CTAP (444-4479) for further information.

---



# GOODBYE DENISE



Montana's training program took a severe blow in January when Denise Ingman announced she will be leaving the Water Quality Bureau. Denise made the decision to unpack her travel bags and spend evenings at home rather than "on the road".

Fortunately, Denise will remain with the Department of Health & Environmental Sciences. She is taking a job in the Public Health Laboratory doing microbiological analysis.

Denise has been a "shining star" for the Water Quality Bureau. Her nearly ten years of dedicated employment has resulted in many outstanding accomplishments. She is responsible for creating and developing the Montana Training Calendar for water and wastewater professionals. The success of the annual school for water and wastewater operators and managers is due primarily to Denise's efforts. She is responsible for the excellent coordination that exists among all training

organizations, such as Montana Rural Water Systems, from whom she received their Distinguished Service Award in 1986. These are just a few of her many accomplishments which are far too numerous to list.

Denise will remain active in the profession through her new job where she will be analyzing many of the samples you collect and send in. In addition, Denise will remain active in the Montana Section of the American Water Works Association of which she is currently serving as chairman.

We know Denise's decision to leave was very difficult due to her allegiance with the operators of the state. I know she will miss the day to day contact with all of us in the profession but not nearly as much as we will miss her. Please bear with our training program in this time of transition. Denise has left some very big shoes to fill.

Good luck Denise, we will miss you.

# SNAKES IN OUR DRINKING WATER??!!

By: David H. Haverfield  
Lolo Sewer and Water District

Could it be possible? That's what the Shelby Homeowners Association of the Lolo area wanted to know late one evening this last summer.

It all began when a homeowner whose residence was built above the reservoir called the operator to complain that they had no water. The rest of the subdivision; it was discovered, was using far more water than the two submersible well pumps were able to provide to the concrete reservoir. A switch recently installed on a centrifugal booster pump which served the now dry residence was preventing the pump from running, due to the low water levels.

When the padlocked hatch covers were opened, the reservoir was found to be nearly empty. It is an underground cement structure which is completely buried except for the access hatches and a few appurtenances. Since it is usually nearly full, seeing the bottom clearly during routine inspections is difficult at best. However, now with the water a few feet deep, in the dark a flashlight brought a disturbing image. It appeared that a snake was resting on the bottom. Upon inspection from inside the tank several others were also located. The decision was reached to shut off the pumps and to open the fire hydrants in order to flush out the rest of the water, thereby enabling the retrieval of these unwelcome intruders.

Completely draining the tank with a pump would have been a time-consuming process, and would have left the residents of the subdivision waterless without prior notice. It was desirable to have the system back in service before dawn the next day, using whatever reasonable methods available.

Before entering the reservoir, everything that would come in contact with drinking water had to be cleaned. Rubber boots, gloves and all tools were scrubbed with a 50 mg/l solution of water and calcium hypochlorite. Once inside, it became obvious that the animals were long past dead, and in fact only scales remained; not even a skeletal structure was found. Additionally, walking too close to them in the foot or so of remaining water caused them to disintegrate. The problem presented was how to remove loosely-jointed scaly structures without agitating them into small pieces, resulting in vastly more difficult and time consuming retrieval operations.

A suggestion was made to use a hydro-vac. This is the same hardware store vacuum cleaner that allows the removal of water from a floor. The building and cleaning trades have been using them for years with relative safety. Since ours was almost completely made of plastic, it was decided that it should be reasonably safe for use in this damp environment. The operator was able to



float the vac sufficiently to extend the hose near a snake remains. Fortunately the parts held together well enough to be drawn in. Two other persons assisted by dumping the water from the vacuum cleaner, and acting as safety personnel to disconnect the power cord in the event of electrical shock.

No less than nine Garter Snakes were cleaned up that night. Their access to the tank appeared to be due in part to an improper seal between the lid and the concrete opening. It is possible that some had gained entry during construction, between the time of cement curing and when the system was filled and placed into service. After completion of the cleanup the storage reservoir was disinfected with chlorine solution in detention before draining and refilling.

Hindsight, it is said, is nearly always 20/20. Perhaps we should have been more suspicious when positive samples would occur on occasion. We had two to three positive samples per year depending on where samples were taken.

In the past, some relief was gained when the well was disinfected with a strong solution of calcium hypochlorite. In our effort to pinpoint the problem other possible sources of contamination were considered. Nearby septic systems combined with a fractured underground rock structure may have allowed septage access to the ground water. The well casing was also examined for poor grouting. No obvious problem was noted by either the operator or the local health department staff.

Sometime after the well disinfection was completed and the State Water Quality Bureau gave permission to monitor on a quarterly basis, a positive test result again was found. This prompted the operator to place foam strips between the lid and the concrete opening to the reservoir, as it was possible for small insects and grasshoppers (and apparently snakes) to find their way inside.

One of the lessons of this incident is for operators to be on the alert for any positive test of contamination and pollution. Occasional positive samples usually are indicators of problems, and should not be ignored. It is important to call the Water Quality Bureau to obtain the recommended corrective procedure, which will help to reduce the possibility of lawsuits against the operator and other persons in responsible charge.

Using an electric device such as a vacuum cleaner as standard procedure for removing objects in water, is dangerous and not recommended.

If your system is plagued by reoccurring contaminated samples it's best to examine your water system thoroughly and not to assume that the problem will go away. Contact the Water Quality Bureau and perhaps the Montana Rural Water Association for help and advice. Brush up on your formulas--especially the ones that deal with calculating chlorine dosages. When all else fails, perhaps you, too, have snakes in your drinking water!

# DROUGHT = LOW FLOWS

## WHO GETS THE WATER?

By: Joe Steiner  
City of Billings

Last summer's low stream flows brought about considerable concern over water use. Who owns the water: you, me, nobody or everyone?

In Montana, nobody owns the water but you can obtain a right to use the water. Also water can be reserved for future beneficial uses. How do the water right and water reservation processes work during times of water shortages?

Settlement of the west brought with it many changes, including a new way to allocate water for various uses. The settlers developed the prior appropriation system of water allocation. In simple terms, the prior appropriation system is the first user (in time) is guaranteed a water supply before junior (in time) user(s) can receive water. This method works well for such consumptive users as mining and irrigation. The water had to be put to a beneficial use to ensure the water right. The development of diversion structures necessary for domestic and irrigation uses perfected the rights. The system works well, but does not promote conservation of water during water shortages.

Montana's water rights are presently being adjudicated by the water courts. The process has been ongoing since 1979, and no completion date is in sight. Some users will not know the actual amount of their water right until the adjudication process is complete.

In the 1960's and 1970's Montanans realized that the prior appropriation doctrine does not ensure the preservation of water in the watercourse. This change in societal ideals brought about the passage of the Montana Water Use Act in 1973. The Act's goal is "to preserve waters for existing or future beneficial uses or to maintain a minimum flow or quality of water." The Act set the framework for the Montana water reservation process.

The reservation process allowed state agencies or political subdivisions of the state and federal agencies to apply for a water reservation. The administrative process included identification of quantities of water needed for future irrigation, municipal uses, in-stream purposes and future storage projects.

After completing an environmental impact statement and holding a public hearing, the Board of Natural Resources and Conservation (BNRC) established water reservations using a set of priorities established during the process. The priority date for the issuance of a water reservation takes on the same importance as the date of a water right claim. During times of water shortages, the reservations with the earliest priority dates are senior to the later ones. Once the reservations are issued, the BNRC is mandated to review them at least once every ten years. If the objectives are not being met, the reservation could be modified, revoked or extended.

The only river basin for which the reservation process has been completed is the Yellowstone. The initial process was completed in 1978, and is now in the midst of the first ten year review. During the initial process, BNRC established



municipal uses as the highest priority. In-stream flow in the Yellowstone River and its tributaries above the Bighorn River received second priority followed by irrigation reservations for districts, state agencies and federal agencies; below the mouth of the Bighorn River irrigation reservations have second priority followed by in-stream flow. The quantities of the reservations are: 5,500,000 acre-feet (AC-FT) per year for in-stream; 1,200,000 AC-FT per year for future off-stream storage; 655,000 AC-FT per year for future irrigation; and 61,000 AC-FT per year for municipal use.

Many have felt that large in-stream reservations are detrimental to other water uses, but consider the following. All reservations remain as in-stream flow until they are put to use: i.e. storage reservoirs are built, municipalities grow and need the water, or additional irrigation water is needed. Only in-stream water can be reallocated after the original reservation process and only as long as the need for the reallocated water exceeds that for the in-stream water reservation. This reallocation retains the original priority date, which is significant during times of water shortage. Municipalities require a large in-stream flow to guarantee reasonable raw water for drinking water supplies, as well as adequate water to assimilate discharging wastewater.

In-stream flows are the hub of the reservation process. If the need for a reallocation can be shown to outweigh the need to have the water in-stream the reserve can be used. Need will be determined through the same process as was used for the original reservation. All users may benefit from the process. The public good is served by economic uses such as irrigation and municipal supply as well as intangible and recreational values.

How does the water right process integrate with the water reservation? Good question. All water reservations are junior to existing water rights. Therefore, if a stream is over-appropriated or appropriated for 100% of the flow, there is no water available for reservations. If water is available after the waterway's rights are adjudicated, the reservation process will be used to direct the future use of the water. During times of drought and/or water shortages, the water rights hinge on the date claims were filed. The water reservation priority is established by the date the reservation is issued.

Until the water courts complete the adjudication process, the real value of water reservation will not be known. Montanans are requiring that sufficient water be maintained for a broad range of uses including public, environmental, recreational, ecological and aesthetic purposes in addition to traditional irrigation and domestic uses.



# MORE THAN YOU EVER WANT TO KNOW ABOUT pH

By: John Hawthorne, Chief  
DHES Chemistry Laboratory

The pH concept was introduced by S. Sorensen, a Danish chemist who published his classic work in German and French in 1909. He defined pH as the negative log of the hydrogen ion activity, or

$$\text{pH} = -\log a_{\text{H}} .$$

It is impossible to measure hydrogen ion activity directly, but in very dilute solutions, the molar concentration,  $c_{\text{H}}$ , approximates the activity. The molar concentration of hydrogen ions is often very small, and is usually expressed by exponential notation. A concentration of .01 can be written  $10^{-2}$ , for example. Another way of expressing molar concentration is

$$c_{\text{H}} = 10^{-\text{P}}$$

where p, the initial letter in the word "power", was called the hydrogen ion exponent by Sorensen, and was written  $\text{p}_{\text{H}}$ . For convenience in typesetting,  $\text{p}_{\text{H}}$  has been superseded by pH.

Because the activity of the hydrogen ion cannot be measured, a conventional basis for defining the pH scale was needed. Several were proposed. The pR unit increased with acidity and ranged from +14 to -14. Two other units, rA and  $\text{N}_{\text{H}}$ , behaved similarly. None gained the wide acceptance of Sorensen's pH scale, however. The approximate practical range of his pH scale is -1 to 15 at ordinary temperatures.

At a given temperature, pH indicates the "intensity" of the acidic or basic character of the solution. Alkalinity and acidity, on the other hand, are measures of the neutralizing capacities of the water. Thus a water sample with a pH of 8.2 may have a higher alkalinity than a water sample with a pH of 8.6.

The determination of pH is a branch of applied electrochemistry. In electrochemical reactions, chemical energy is transformed into electrical energy. When sensitive glass and reference electrodes are immersed in the sample, a chemical equilibrium is established between the hydrogen ions in solution and ions in the glass membrane. This causes a potential difference (in volts), which is measured by comparison to a stable reference electrode. The impossibility of measuring pH directly necessitates comparison of samples against standard buffers. This operational scale is defined as

$$\text{pH}_{\text{S}} = \text{pH}_{\text{b}} + (F(E_{\text{X}} - E_{\text{b}})/2.303RT)$$

where:

$\text{pH}_{\text{S}}$  = sample pH

$\text{pH}_{\text{b}}$  = buffer pH

F = Faraday,  $9.649 \times 10^4$  coulomb/mole

$E_{\text{X}}$  = sample potential difference, volts

$E_{\text{b}}$  = buffer potential difference, volts

R = gas constant, 8.314 joule/(mole  $^{\circ}\text{K}$ )

T = temperature,  $^{\circ}\text{K}$



Fortunately, your pH meter does the math for you when you use standard buffer solutions for purposes of calibrating, or adjusting, the meter.

The operational scale defined above is only valid in very dilute solutions. Determination of pH cannot be made accurately in solutions with a high ionic strength. Temperature affects pH measurements by shifting the chemical equilibrium in the electrodes. That is why pH buffers specify their value at specific temperatures.

It should be noted that pH measurements made with indicator dyes relate only indirectly to the pH determined electrometrically. The indicator dye methods are somewhat inaccurate and should only be used when an approximate pH value is needed.

If you wish to learn more about pH, the following are excellent references:

Bates, R. G. 1973. "Determination of pH, Theory and Practice", second edition.

APHA-AWWA "Standard Methods for the Examination of Water and Wastewater", sixteenth edition.

## USING LOTUS 1-2-3 FOR LABORATORY CALCULATIONS

By: Louis L. Jenkins, Operator  
Kalispell WWTP

If you have a personal computer around your plant that is being used for budget, inventory, etc., there is a good chance that part of the software is a spreadsheet program such as Lotus 1-2-3. It is very easy to set up some templates in 1-2-3 that you can use to do your laboratory calculations.

One of the templates I have created is for use in figuring total phosphorus. With this template you no longer need to create the graphs and try to read your sample phosphorus in that manner. This template is based on the formula for a straight line [ $y=mx+b$ ] where  $m$ =slope, and  $b$ =the  $y$  intercept]. The template formulas used are for a 50 milliliter sample. If other than this volume is used only minor changes to formulas are needed. This template can also easily be converted to figure nitrate.

One important thing to remember when using templates is that if you wish to save your calculations, save the file under a new name, so that you don't mess up your original template. Many of the other laboratory calculations are easily adaptable to 1-2-3 templates.

If you would like a copy of the program, please contact Dick Pedersen of the Water Quality Bureau at 444-2406, or Louis Jenkins of the City of Kalispell at 752-6600, ext. 207.

The following article addresses the issue of stricter standards for the use of chlorine gas including requirements for use by certified applicators only. Please note that this is the most current information that the Water Quality Bureau or the Environmental Protection Agency has available at this time. Those agencies will notify all interested parties once more information is available so please do not beseege those agencies with calls on the subject at this time. The editors of the Big Sky Clearwater felt that this article may be of interest to many of you and wanted to share it in their publication.

## WILL CHLORINE GAS USE BE RESTRICTED?

By: Samuel J. Hadeed

*Reprinted from an article published in the Winter 1988 issue of Safety and Occupational Health, a periodical of the Water Pollution Control Federation*

EPA's Office of Drinking Water (ODW) and Office of Municipal Pollution Control (OMPC) are involved in a decision made this summer by a policy group within the Agency to reclassify all uses of chlorine gas to restricted use. EPA is actively considering reclassification of chlorine as a restricted use pesticide under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

Under the proposed new classification, all chlorine gas applications may only be used by or under the direct supervision of a certified applicator. The affected uses include residential and non-residential swimming pools, municipal wastewater treatment, drinking water treatment, cooling towers, pulp and paper mills, and fruit and vegetable wash. Under FIFRA, certification is federally controlled and very rigidly enforced. Failure to comply would also prohibit the use of chlorine.

EPA's move has emanated from recent concern about non-residential swimming pool use of chlorine gas. The chlorine Institute had earlier filed a petition requesting that non-residential swimming pools be required to use chlorine under the direct supervision of a certified applicator. The current situation requires that a certified applicator be available to respond to an emergency within a reasonable period of time. Under the proposed regulation, a certified applicator must be present within 5 minutes if a chlorine gas release occurs.

OMPC acknowledges that most states have mandatory certification programs for municipal wastewater treatment operators and use the Association of Boards of Certification (ABC) to develop their certification program. They also note that many municipal treatment plants have personal protective equipment, including self-containing breathing apparatus, chlorine leak detectors, repair kits, and other equipment necessary to handle chlorine gas. However, by expanding the scope of the regulation, OMPC contends that many states have identified chlorine gas as a dangerous substance used by many municipal plants and claims to have accident records to support the argument for reclassification.

EPA plans to publish its proposed rulemaking in the Federal Register within the next several months. Interested parties will have an opportunity to challenge or support the Agency's position. if promulgated, all municipal wastewater treatment plants will be subjected to the regulations by 1990.



Because chlorine is listed as an extremely hazardous substance, with potentially serious consequences to the community if a major release occurred, it would seem to be a prudent course for the Agency to follow, as reclassification would strengthen the SARA Title III program of "Community Right-to-Know Act."

But will it?

Requiring a certified applicator to use chlorine gas at all municipal wastewater treatment facilities is part of a solution but cannot substitute for a comprehensive emergency response plan. Under its current structure, the Title III program, as administered by EPA, has minimal impact on municipal compliance. Likewise, municipalities are not subject to federal OSHA's "Hazardous Communication" program, which is designed to protect worker safety and health.

Responding to an emergency situation involving a major chlorine gas release attributed to a wastewater facility requires the collective input of all employees in the immediate area, not just the certified applicator. Every employee at a wastewater treatment plant should be trained in chemical handling, particularly chlorine, as they will be the first responders before outside assistance is available.

Compliance with state OSHA Hazard Communication and EPA Title III legislation by municipal facilities would help protect the worker and community from a chemical disaster. If EPA ultimately reclassifies chlorine as a pesticide for restricted use, then WPCF may need to consider a more aggressive approach toward encouraging the chlorine requirement as part of operator certification. Development of chlorine certification training aids for the member associations is another possibility. A WPCF manual of practice on "Emergency Response for Municipal Wastewater Facilities" will be available by October 1989.

Please let me know your views on this issue. The topic is sure to become visible in the months ahead. Perhaps we can devote some space in the next issue of the Safety Bulletin for your comments.

## UNDERSTANDING CHLORINATION

By: Doris Roberts  
Northern Montana College

Most of you have to use some type of disinfection in your water or wastewater system. The means of disinfection most commonly used is chlorine. What is a disinfectant? How does chlorine react in water? What is free available chlorine? What is combined available chlorine? This article will attempt to answer these questions.

A disinfectant is a germicide that kills pathogens. In turn, a germicide is an agent that kills "germs", and pathogens are disease-causing "germs". Don't confuse disinfection with sterilization, which is the destruction of all life.

What happens when we put chlorine in water? The following reaction occurs:

Chlorine + Water = Hypochlorous Acid + Hydrogen + Chlorine Ion

or putting it in a chemical formula



The reaction goes further when the hypochlorous acid (HOCl) dissociates or breaks up to form hydrogen and hypochlorite ions ( $\text{OCl}^-$ ).



Hypochlorous acid and hypochlorite ions make up what is known as free available chlorine. In the chlorination of wastewater and water the free available chlorine is used up in reactions with impurities. The chlorine will react with inorganics (hydrogen sulfide, nitrate, sulfite, manganese, etc.), ammonia and amines, organics, and bacteria and other organisms.

If the chlorine reacts with an inorganic such as hydrogen sulfide for example, the resulting compound will not kill pathogens. These reactions are important because they use up chlorine that otherwise would be utilized for disinfection.

When chlorine reacts with organics, organochlorine compounds are formed. Although these compounds are not effective at disinfection, they are important because they use up chlorine and they can be harmful to some forms of aquatic life as well. In addition, some of the organochlorine compounds can be harmful to humans if consumed in the water supply.

Chlorine reacts with the ammonia found in the water to produce chloramines which have disinfecting power and are known as combined available chlorine. Chloramines persist longer in water than free available chlorine. In fact, some water plants add ammonia in order to form chloramines when they have long distribution lines and need to maintain a chlorine residual.

The basic reason why you have to add so much chlorine to a system is that impurities in water and wastewater use up the chlorine needed for disinfection. If you had only bacteria and no other impurities in the water, you could use much lower dosages to reach the level of disinfection that you wanted.

When sampling water distribution systems you must test for free available chlorine. However, for wastewater, the operator tests total residual chlorine, which is combined available chlorine plus free available chlorine. This is important because wastewater contains ammonia, and a great deal of chlorine must be added to wastewater both to react with all of the ammonia and to produce the required concentrations of free available chlorine.

Now refer back to the first paragraph of the article. Does the information above help you answer the questions presented there?



# SPECIAL PRE-CONFERENCE SEMINAR COAGULATION AND FILTRATION

DR. RAY LETTERMAN, PROFESSOR OF CIVIL ENGINEERING  
SYRACUSE UNIVERSITY

Dr. Letterman is Professor of Civil Engineering at Syracuse University, Syracuse, New York. He has published more than 35 articles on coagulation and filtration. He is Chairman of the AWWA Polyelectrolytes Committee and also serves on the Standard Methods Committee on Turbidity. Dr. Letterman's seminar will cover the following topics:

- \* Filtration Requirements
- \* EPA Filtration Proposals and the Nature of Particles in Surface Water
- \* Turbidity Measurement
- \* Filter Technology
- \* Pretreatment and how it Relates to Filter Performance
- \* Available Filtration Systems

Date: Wednesday, March 29, 1989      Time: 9:00 a.m. - 4:00 p.m.  
Place: Heritage Inn, Great Falls      Sponsor: Joint Education Committee  
Cost: \$20.00 (Register as part of the Joint MSAWWA/MWPCA Conference)

## 1989 MSAWWA/MWPCA CONFERENCE

### WEDNESDAY, MARCH 29

9:00 - 4:00      *JEC Special Seminar - Coagulation and Filtration*  
                    *Dr. Ray Letterman, Professor, Syracuse Univ.*  
                    *(attendance requires additional \$20 fee)*

1:00 - 5:00      Joint Conference Registration/Exhibit Area Open  
3:00 - 5:00      Welcome/Business Meeting

### EVENING

5:00 - 7:00      Hosted Social Hour - Exhibit Area

THURSDAY MARCH 30

**MORNING**

7:30 Registration Opens

**Joint Session**

- 8:00 - 9:30 Water Rights - Yours, Mine or Theirs; Water Rights Adjudication  
Judge W.W. Lessley, Water Court
- 9:30 - 10:00 Montana State Water Plan and Reservation Process  
Larry Fasbender - Past Director, DNRC
- 10:00 - 10:30 Break - Exhibit Area

**Concurrent Sessions**

- 10:30 - 11:30 a. Drinking Water Regulations - AWWA Perspective  
Jack Hoffbuhr, AWWA Deputy Executive Director for Technical Affairs  
b. Chlorine Dioxide  
Ben Lykins, USEPA
- 11:30 - 12:00 a. Safe Drinking Water Act - Montana Update  
Dan Fraser, WQB  
b. Effects of Oil and Grease on Filamentous Populations and Complete-Mix Activated Sludge Plants.  
Kristi Kline, Havre WWTP and Dr. Martha Dow, NMC
- 12:00 - 2:00 Luncheon/AWWA Pres. Steven Bonk  
WPCF Vice Pres. Chuck Kaiser

**AFTERNOON**

**Concurrent Sessions**

- 2:00 - 3:00 a. Polymer Usage in Drinking Water  
Dr. Ray Letterman, Syracuse Univ.  
b. Biofilms in Wastewater  
Dr. Bill Characklis, MSU
- 3:00 - 3:45 a. Drinking Water - Microbiology  
Don Reasoner, USEPA  
b. Waste Disposal from Ground Water Reclamation Projects: "How to Get the Gas Out".  
Bart Barlow
- 3:45 - 4:00 Break - Exhibit Area
- 4:00 - 5:00 a. AWWA Research Foundation Program and Projects  
Rick Karlin, Director, AWWARF Research Management Division  
b. Biological Monitors - Are They Here?  
Randy Isham, Aqua Surveys; Tim Hunter, City of Missoula;  
Fred Shewman, WQB



## EVENING

5:00 Banquet and Entertainment

FRIDAY, MARCH 31, 1989

## MORNING

### Joint Session

8:00 - 8:45 Infrastructure  
Montana Contractors Assoc.

8:45 - 9:30 Berkeley Pit - Where Are We Now?  
Bob Hunter, MSU

9:30 - 10:00 Computer Assisted Design  
Greg Kegel, NMC

10:00 - 10:15 Break

10:15 - 12:00 Joint Business Meeting MSAWWA/MWPCA

12:00 - 2:00 Awards Luncheon and Sapphire Drawing  
Adjourn

---

# TASTE TEST

## WHO IS THE BEST?

*The Third Annual Drinking Water Taste Test challenge will be held at the 1989 MSAWWA/MWPCA Joint Conference in Great Falls. Judging will take place by a panel of peers, with the winner announced during the conference.*

*To enter, bring ONE LITER of water from your distribution system to the conference registration desk when you check in. A glass container or odor free plastic bottle is recommended.*

*Past Winners Are: City of Great Falls 1987  
Rainbow Dam, Great Falls 1988*

---

# PRE-REGISTRATION FORM

## 1989 ANNUAL MSAWWA/MWPCA CONVENTION

MARCH 29, 30 & 31, 1989  
GREAT FALLS, MONTANA

Pre-registration will automatically be entered in the drawing for sapphire jewelry donated by Dick Montgomery of Helena. This jewelry will be given away at the Friday luncheon. Late registrants (after March 17th) are ineligible for the drawing unless tickets are purchased at the conference.

Pre-registration information must be received by March 17, 1989. Make checks payable to MSAWWA/MWPCA Host City Committee and mail this form with your check to:

MSAWWA/MWPCA HOST CITY COMMITTEE  
C/O E.O.S. OPERATING SERVICES  
P. O. BOX 547  
BLACK EAGLE, MT 59414

Name \_\_\_\_\_  
last first middle initial

Title \_\_\_\_\_

Organization \_\_\_\_\_

Mailing address \_\_\_\_\_  
street or PO Box City/State/Zip

Spouse/guest name (if attending) \_\_\_\_\_

Hotel registration cards will be sent with pre-registration packets. Those interested in reserving rooms early should contact:

Heritage Inn  
1700 Fox Farm Road  
Great Falls, MT 59404  
1-800-528-1234 or (406) 761-1900

Vendors interested in displays will be contacted by separate letter.

### \* REGISTRATION FEES \*

AWWA and/or WPCA members	\$ 75.00	_____
AWWA and/or WPCA members (one day only)	50.00	_____
Non-members*	85.00	_____
Non-members (one day only)*	60.00	_____
Spouse (all meals included)	20.00	_____
Additional luncheon tickets __Thu __Fri	7.00	_____
Additional Thursday banquet tickets	18.00	_____
Additional lecture	20.00	_____

Total remitted \$ \_\_\_\_\_

\*Non-members joining now-enclose completed membership application and 1 year's dues, then register as a member.



# AWWA MEMBERSHIP REPORT

Over the last year AWWA's Montana Section has grown to 192 members as well as 17 multi-section members. This is an increase of 6.7% over 1987 membership figures! It shows that we continue to grow despite tough economic times for our utilities and water professionals, and it speaks well for the benefits of AWWA.

As you all probably know, effective January 1, 1989, there was an increase in AWWA annual membership dues. The dues increase was approved by the Board of Directors, in response to escalating costs for program development and association evolution. Some of these programs include: services required for membership benefits; funding new and expanded programs such as small systems, improved communications, additional public education programs, and legislative alerts; establishing a more active public information program; and ensuring the financial stability of the Association for the foreseeable future.

Direct benefits to Montana's Section have increased accordingly. Information on our programs which have additional funds from National can be found elsewhere in this issue of the Clearwater.

## TOP 1988 RECRUITER:

January 1, 1989, also marked the end of the recruiting competition for 1988. The Top Recruiter for 1988 will receive their choice of a full year Active Membership or \$58.00 towards AWWA publications, and will be honored during the 1989 Joint Conference in Great Falls.

Many thanks to all of the 1988 recruiters for their efforts in promoting our association. Recruiters for 1988 were:

Earl Park (1)	Bob Peccia (1)	Joe Steiner (1)
Greg Acton (6)	George Wilson (2)	
Donna Howell (8)	Charlie Dickert (1)	

Welcome to the following new members since July 1:

Philip Arends, Williston	Robert Piorek, Missoula
Steve Damon, Columbia Falls	William Moller, Columbia Falls
Kenneth Kessner, Gt. Falls	Nilaksh Kothari, Billings
Danny Trettin, Helena	John Wahoff, Gardiner
Jan Cranor, Billings	Sam Novich, Twin Bridges

and new Multi-Section Members Brian Kilgore, Lakewood, CO, and Scott Setzer, Seattle, WA.

## THE 1989 TOP RECRUITER COMPETITION BEGINS!

Membership applications may be obtained by contacting Donna Howell or Michele Wityk at 444-2406, or just copy an application from any 1989 AWWA publication.



# TRY US!

## MONTANA SECTION AMERICAN WATER WORKS ASSOCIATION MEMBERSHIP APPLICATION

**NON-MEMBERS JOINING NOW:** Return this completed application with your dues and 1989 MSAWWA/MWPCA Conference Preregistration to the Host City Committee. You can then register for the conference and receive the member discount.

**NON-MEMBERS NOT ATTENDING THE CONFERENCE:** Return this completed application to AWWA \* 6666 W. Quincy Avenue \* Denver, CO 80235.

**FOR MORE INFORMATION PLEASE CONTACT:** Donna Howell or Michele Wityk at 444-2406.

PLEASE PRINT OR TYPE		AWWA USE ONLY	
LAST NAME		FIRST NAME and middle initial	
MAILING ADDRESS			
CITY		STATE OR PROVINCE	ZIP CODE
AREA CODE	TELEPHONE		
TITLE			
EMPLOYER'S NAME if not already in mailing address			
APPLICANT'S SIGNATURE		DATE	
SIGNATURE OF AWWA MEMBER ENDORSING APPLICATION (Optional)		ENDORSER MEMBER NUMBER	

<table><thead><tr><th>Check One</th><th>Grade Code</th><th>Annual Dues</th></tr></thead><tbody><tr><td><input type="checkbox"/> Active</td><td>02</td><td>\$58.00</td></tr><tr><td><input type="checkbox"/> Affiliate (Strictly for operator-level personnel or employees of small utilities)</td><td>06</td><td>\$27.00</td></tr><tr><td><input type="checkbox"/> Student (Must be enrolled and carrying at least 10 credit hours)</td><td>14</td><td>\$20.00</td></tr></tbody></table>	Check One	Grade Code	Annual Dues	<input type="checkbox"/> Active	02	\$58.00	<input type="checkbox"/> Affiliate (Strictly for operator-level personnel or employees of small utilities)	06	\$27.00	<input type="checkbox"/> Student (Must be enrolled and carrying at least 10 credit hours)	14	\$20.00	<p>Applicants with an address in the New England Section (ME, NH, RI, VT, MA) are required to include an assessment of \$26.50 with their AWWA dues.</p> <p>Make check payable to AWWA in U.S. funds.</p> <p><input type="checkbox"/> American Express    <input type="checkbox"/> Diner's Club    <input type="checkbox"/> MasterCard    <input type="checkbox"/> Visa</p> <p>Credit Card No. _____</p> <p>Exp. Date _____</p> <p><input type="checkbox"/> Send invoice</p> <p>If you have been a member of AWWA before, indicate dates here: _____</p>
Check One	Grade Code	Annual Dues											
<input type="checkbox"/> Active	02	\$58.00											
<input type="checkbox"/> Affiliate (Strictly for operator-level personnel or employees of small utilities)	06	\$27.00											
<input type="checkbox"/> Student (Must be enrolled and carrying at least 10 credit hours)	14	\$20.00											

<b>ALL APPLICANTS SHOULD COMPLETE THIS SECTION:</b> Circle the descriptions below that best describe you. The information is used in audits of AWWA readership. Circle only one in each group.		
<b>1. BUSINESS AND INDUSTRY</b> A. Public Water Supply Utility—Municipally Owned B. Public Water Supply Utility—Investor Owned C. Governmental—Federal, State, Local D. Consultant E. Contractor F. Private Industrial Systems or Water Wholesaler G. Manufacturer of Equipment & Supplies including Representatives H. Distributors of Equipment & Supplies including Representatives I. Educational Institutions Faculty and Students, Libraries, and Other Related Organizations J. Fully Retired K. Research Labs	<b>2. JOB TITLE</b> A. Executive—Gen'l Mgr., Commissioner, Board Member, City Mgr., Mayor, President, Vice-President, Owner, Partner, Director, etc. B. Management—Division Head, Section Head, Dept. Head, Mgr., Chief Engineer, Comptroller, etc. C. Engineering/non-managerial—Civil Engr., Mech. Engr., Envir. Engr., Planning Mgr., Field Engr., Systems Designer, etc. D. Scientific/non-managerial—Chemist, Biologist, Biophysicist, Researcher, Analyst, etc. E. Purchasing—Purchasing Agent, Procurement Specialist, Buyer, etc. F. Operations—Foreman, Operator, Maintenance, Crewman, Service Rep., etc. G. Marketing & Sales/non-managerial—Mkt. Analyst, Mkt Rep., Salesman, Sales Rep., etc. H. Other describe: _____	<b>CHECK FIELD(S) SERVED:</b> 5 <input type="checkbox"/> Water Supply Only    9 <input type="checkbox"/> Both 7 <input type="checkbox"/> Wastewater Only    3 <input type="checkbox"/> Other  In some AWWA sections, a portion of the section allotment equal to 50 percent or more of the domestic subscription rate charged for the section periodical will be allocated toward a subscription of that periodical.  <b>Dues allocated for each publication members receive: Journal \$25 • Mainstream \$6 • OpFlow \$5 • Waterworld News \$5</b>



# ATTENTION WASTEWATER PROFESSIONALS

WPCF has recognized that wastewater treatment professionals provide one of the most essential services in the environmental field. Operators have specialized interests and needs, WPCF offers the Professional Wastewater Operators Division to meet those needs.

As a member, you will receive Operations Forum, a magazine dedicated to the needs of treatment plant operations, laboratory controls, collection systems, and maintenance personnel. Operations Forum is designed to help you, the wastewater operations specialist, improve your skills and maintain top system performance. Information on job advancement, laboratory management, process control, sludge

disposal and results of WPCF's annual safety survey are all important issues covered monthly in Operations Forum.

The PWOD is currently 36% of Montana's association members (45). It is the goal of the membership committee to bring PWOD membership to 50 members by 1990. Sign-up now and tell co-workers because the PWOD works for all wastewater professionals. For more information contact Darrel Langford, PWOD director and membership chairman, at 449-7026 or 442-9920 (ext. 456). To mail your information request, write to: Darrell Langford, 1708 Custer Avenue, Helena, MT 59601.

## Membership Application

### Water Pollution Control Federation

601 Wythe Street  
Alexandria, Virginia 22314-1994

### Association

Montana Water Pollution Control Association

Use this application to join the Water Pollution Control Federation and your local Member Association. Simply complete this application and return it to the address

below. Along with your monthly publications, you are also entitled to group insurance, technical assistance, discount on technical publications, and much more!

Please print.

First Name, Middle Initial (11)

Last Name (16)

(3)  
(Jr., Sr., etc.)

Mailing address ☐ Business or ☐ Home

Business Name (if applicable) (30)

Street or P.O. Box (30)

City (20) State (2) Zip Code (9)

Area Code—Telephone (10) Country (If Outside U.S.) (16)

WPCF Sponsor (Not Required)

Sponsor's Member I.D. Number

(28)

(6)

Employer Code (2)

11 - Local/Regional Government/Agency  
13 - State/Interstate Government/Agency  
16 - Federal Government/Agency  
21 - Consulting Firm (Engineering/Other)  
25 - Wastewater Equipment/Material/Supplier

27 - Industry  
28 - Construction Contractor  
31 - Educational Institution  
61 - Other (Please specify):




Education Code (1)

1 - Less than High School  
2 - Training Courses, Short School  
3 - High School  
4 - Attended College  
5 - Completed Junior College  
6 - Bachelor's Degree  
7 - Advanced Degree

### Membership Categories

<input type="checkbox"/> <b>Active</b>	<input type="checkbox"/> <b>Operations Division</b>	<input type="checkbox"/> <b>Student</b>	<input type="checkbox"/> <b>Corporate</b>
For individuals involved or interested in the advancement of knowledge pertaining to water quality.	For individuals working on a day-to-day basis (or retired from) in a wastewater collection, treatment, or laboratory facility.	For individuals enrolled at least half-time in a college or university.	For companies engaged in the design, construction, operation or management of water quality systems.
Dues \$ <u>55.00</u>	Dues \$ <u>22.50</u>	Dues \$ <u>19.50</u>	Dues \$ <u>180.00</u>
Journal Included	Journal <input type="checkbox"/> \$30.00	Journal Included	Journal Included
Highlights Included	Highlights <input type="checkbox"/> \$15.00	Highlights Included	Highlights Included
Forum <input type="checkbox"/> \$12.50	Forum Included	Forum <input type="checkbox"/> \$12.50	Forum Included
TOTAL \$ <u>          </u>	TOTAL \$ <u>          </u>	TOTAL \$ <u>          </u>	TOTAL \$ <u>          </u>

### Method of Payment

☐ Check Enclosed—Make check payable to WPCF.  
☐ Charge my ☐  ☐  ☐ 

Account Number

Exp. Date

Signature

Daytime Phone No.

Send Completed Application and Payment to:

**WPCF, Member Records**  
601 Wythe Street  
Alexandria, Virginia 22314-1994

For more information, call (703) 684-2452

Postal Requirement: Dues allocated for publications when included in membership: JWPCF — \$15, Highlights — \$3, Operations Forum — \$5.

# EXAMINATION NOTICE

ON SATURDAY-----MARCH 11, 1989-----9:30 A.M.

Examinations for certification as a Water Distribution System Operator, Water Plant Operator and Wastewater Plant Operator will be given at these seven locations:

BILLINGS----- Banquet Room, Student Union Building, Eastern Montana College  
GLENDDIVE----- Room 138, Dawson Community College, 300 College Drive  
GREAT FALLS-- Room S119, Science Amphitheater, College of Great Falls  
HAVRE----- Room 103-4, Hagener Science Center, Northern Montana College  
HELENA----- Room C209, Cogswell Building, (Broadway entrance)  
KALISPELL---- Room 37, Montana Hall, Flathead Valley Community College, 15 First St.E.  
MISSOULA----- Room 102, Liberal Arts Building, University of Montana

By February 24, as required by ARM 16.18.204, everyone taking examinations must have:

- completed an application for certification as a water/wastewater operator.
- paid application (or renewal) fees for fiscal year 89 which ends 6/30/89.
- submitted examination registration slips and fees of \$5 per examination.

APPLICATION FEES ARE: Class 1-\$27; Class 2-\$22; Class 3-\$17; Class 4-\$12; Class 5-\$10  
To request application materials, order study materials, or ask for additional information call the certification office at 444-2691 or write: DHES-WATER QUALITY BUREAU; Water/Wastewater Operator Certification; Room A206, Cogswell Building, Helena, Mt. 59620. RETAIN THE UPPER PORTION OF THIS NOTICE, PLEASE.

---

## EXAMINATION REGISTRATION SLIP

(Detach and return with \$5 per examination by 2/24/89)

I will take the examination(s) I have checked below at: \_\_\_Billings; \_\_\_Glendive;  
\_\_\_Great Falls; \_\_\_Havre; \_\_\_Helena; \_\_\_Kalispell; \_\_\_Missoula

	1	2	3	4	5
A--Water Distribution	_____	_____	_____	_____	
B--Water Plant	_____	_____	_____	_____	_____
C--Wastewater Plant	_____	_____	_____	_____	

\*Combination examination 2A3B, 3A4B, 4A4B, and 5A5B require \$5 exam fee only.

NAME \_\_\_\_\_ ADDRESS \_\_\_\_\_ SYSTEM \_\_\_\_\_



# PASSING EXAMINATIONS FOR FULL CERTIFICATION OR OPERATOR-IN-TRAINING (OT)

SEPTEMBER 30, 1988

**Class 1:** John Boettcher, Fort Peck, 1B-ot  
Mike Clark, Bozeman, 1A  
Louis Eskestrand, Havre, 1C-ot  
Bernard Gieser, Laurel, 1C  
Wesley Gilbertson, Miles City, 1B-ot  
James Gross, Butte, 1A/2B-ot  
Don Hancock, Miles City, 1B-ot\*  
Don Hawbaker, Glasgow, 1B  
Karl Jensen, Butte, 1A\*  
Paul Layton, Bozeman, 1C

Dwain Lowry, Santa Rita, 1B-ot  
Glenn Michalson, Bozeman, 1A  
Drue Newfield, Havre, 1A-ot\*  
Robert Piorek, Missoula, 1A/1B-ot\*  
Daniel Rouns, Brady, 1B-ot\*  
Mark Richardson, Miles City, 1B-ot\*  
Jim Sandall, Billings, 1A  
Tony Shipp, Miles City, 1C-ot\*  
Gene Walker, Power, 1B-ot  
Michael Zuppo, Belgrade, 1C\*

**Class 2:** Steve Briggs, Livingston, 2A3B-ot\*  
Richard Clark, Columbia Falls, 2C  
Donald Hawbaker, Glasgow, 2A  
Robert Jacobsen, Forsyth, 2C\*

Richard Johnson, Three Forks, 2C  
Michael Letcher, Great Falls, 2B  
Brian Risser, Colstrip, 2C-ot\*  
Keith Wilmes, Polson, 2C-ot  
David Wyrick, Forsyth, 2C-ot\*

**Class 3:** Bobby Broadway, Great Falls, 3A4B & 3C  
Charles Buechler, Joliet, 3C  
Neil Danielson, Ballantine, 3C  
Roger Giesy, Whitefish, 3C-ot

Russell Giulio, Basin, 3C\*  
Harold Hagberg, Harlowton, 3A4B/3C  
Philip Kruithoff, Kevin, 3A4B  
Ronald Robertson, Whitehall, 3A4B  
Michael Scholz, Big Sky, 3C\*

**Class 4:** Genevieve Adams, Livingston, 4AB\*  
Vern Adkins, Fromberg, 4AB-ot  
Frank Bowen, Kalispell, 4C  
Orval Boyer, Bearcreek, 4C\*  
Floyd Culver, Troy, 4AB  
Neil Danielson, Ballantine, 4AB  
Leslie Frickle, Hardin, 4AB  
James Gillan, Missoula, 4AB\*  
Doug Hellinger, Shelby, 4AB  
Thomas Hotalen, Anaconda, 4AB  
Richard Johnson, Three Forks, 4AB

Jesse Koontz, Lima, 4AB  
Michael Letcher, Great Falls, 4A-ot  
Raymond Miller, Belgrade, 4C\*  
Albert Plant, Arlee, 4AB  
Ed Rasmussen, White Sulphur Spr. 4C\*  
Ronald Robertson, Whitehall, 4C  
Michael Scholz, Big Sky, 4AB\*  
J. W. Smith, Miles City, 4AB-ot  
Milton Toratti, West Yellowstone, 4AB  
Jack Sargent, Hardin, 4AB  
Jack Smith, Hardin, 4AB  
Gene Walker, Power, 4A-ot

**Class 5:** Frank Bowen, Kalispell, 5AB  
Donald Kristensen, Bozeman, 5AB  
Thomas Ivers, West Glacier, 5AB

\* - Identifies those previously certified in another classification

**Water Quality Bureau  
Department of Health and  
Environmental Sciences  
Room A-206, Cogswell Building  
Helena, Montana 59620**

**TO:**

**BULK RATE  
U.S. POSTAGE  
PAID  
HELENA, MT  
PERMIT NO. 89**

1,750 copies of this public document were published at an estimated cost of \$1.26 per copy, for a total cost of \$2,200.00, which includes \$2,200.00 for printing and \$.00 for distribution.